

November 4, 2016

ILRS Quality Control Board (QCB)

Telecon

November 3, 2016

Participants: Toshi Otsubo, Horst Mueller, Cinzia Luceri, Erricos Pavlis, and Mike Pearlman

Mark, Toshi, Horst and Erricos continue to examine the incoming SLR data and issue QC and “exception” reports to the field stations and the community. These tools continue to be upgraded and improved.

The ASC has a pilot project underway to harmonize the results from all of the QC sources and develop a routine data product on an accessible URL that will give clear and useful information on the systematic biases for each station. The output needs to display key dependencies that can reveal performance issues. The web-based product will provide a tool for detailed examination of the data and a basis for standardized reports that can be interpreted by station personnel people and be augmented with highlights and recommended actions. Erricos expects the beta version of the web tool will be ready for testing in the second quarter of 2017.

Practitioners are encouraged to suggest additional displays and screens to aid in diagnostics. Two requests so far are:

(1) Range bias verses range for geodetic satellites (Starlette/Stella, LARES, LAGEOS, etc.) for each station for a standardized time interval (months to a year) to reveal any range dependent biases; Etalon would be a good altitude to include, but data is sparse and the C/M is not well known;

(2) Long-term plots of system biases on LAGEOS by station, averaged in some standardized intervals (moving window) so we can look at historical trends.

The web-tool should help us decide the proper standardized intervals for each application. Although the tool itself offers great flexibility for “discovery”, the stations need a set of consistent displays with standardized conditions to provide a unified framework for their understanding and our use as a means of conveying advice. We need to keep it as simple as we can to convey the message.

Cinzia asked that we provide an automated screening tool that highlights pass discontinuities in the time series and permits automated exclusion if data according to some set of criteria (perhaps based on 5 sigma, perhaps minimum of 4 passes, etc.). We need to determine what would be meaningful and how we ascribe a confidence level to

those criteria. This will require examination of data histories and some testing. The in-line tool should be useful, but some examination now might help formulate some constraints and bounds.

ACTION: Who is going to do this? Someone in DF&P or N&E?

Site Logs are being examined to see if station information is current and if the stations are using the most current satellites C/M models; Tom Varghese is checking on the NASA Sites.

We still have stations that are taking too small a NP sample on passes; in particular the Changchun station is tracking many satellites but has a very sparse sampling on the LAGEOS passes.

ACTION: Mike will contact them.

There is still interest in low elevation tracking as a tool for checking our models (refraction, orbits, etc.). Extending passes to low elevations will cut into tracking time for other satellites, so there is a trade off. Some stations also have minimum elevation restrictions. It was suggested the we could try some simulations to estimate the advantage of the lower elevations data (10 – 20 deg), but we opted instead to examine existing low elevation data from MOBLAS 5 and 7, and any other stations with low elevation data to see if we can reach a conclusion on the value of the low elevation data. We should stick with geodetic satellites from LEO out to LAGEOS.

ACTION: Horst will organize this activity.

Toshi presented a very nice plot of post-fit rms on LAGEOS verses Calibration RMS (see below). The LAGEOS values (y axis) are post fit, NP RMS values per pass, averaged over a year of passes. The calibrations (x-axis) are session RMS values, averaged over a year. Large calibration values may be due to poor calibrations or idiosyncrasies of the calibration technique. Stations with small LAGEOS RMS (< 1 cm) are operating well, regardless of the calibration value. For instance, Potsdam (7841) has a relatively large calibration RMS, but they are well calibrated and the LAGEOS RMS is small. The plot simply suggests that calibration with poor stability (> 1 cm) may in some cases lead to degraded LAGEOS data quality (>1 cm). This might be a good display to use with the stations, in particular with Changchun (7237)

Topics not discussed but not forgotten:

Should there be a minimum number of NP's for a pass to be acceptable? Should we weigh or exclude outlier NP's by the number of contained FR points?

We need define tools/procedures/suggestions to help the stations detect system problems on-site, and to address issues when diagnostics are received from the QC process. This would be a good topic for the Laser Workshop Clinic. Maybe an Action item for the Networks and Engineering Standing Committee?

Maybe Ivan Prochazka would be willing to lead an activity on a rigorous component-by-component approach to trying to understand all sources of error in the SLR measurements.

Carey is working on clarifying the proper point of contact and interface for each of the stations.

A list of the Site Log updates and configuration change notifications has been provided by Erricos. Have all stations provided recent update?

Matt has established the on-line forum tool. He will vet it through the N&E SC and then the Board and the CB. Some messages have already been posted. Take a look.

Next Meeting: December 7 at 14:00 UT; 9:00 Eastern US, 14:00 in UK; 15:00 in Central Europe

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